What's new in dentistry?

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EAR CARTILAGE USED FOR REPLACEMENT OF THE TMJ DISC — Many adult patients have temporomandibular joint problems. Although most of these patients can benefit from non-invasive or non-surgical correction of their problems, a few patients are refractory. They do not respond to less severe treatment measures. Some of these patients have true degeneration and/or perforation of the meniscus or disc within the temporomandibular joint. If the meniscus is removed, something must be placed as a substitute. Currently, researchers are experimenting with placement of cartilage from the outer ear as a substitute for the TMJ meniscus. A recent article in the *Journal of Oral and Maxillofacial Surgery* (48:38-44, 1990), described this type of procedure in a group of experimental animals. The purpose of the study was to evaluate the histologic outcome of auricular or ear cartilage grafted to the TMJ following discectomy. Four adult monkeys were used in this experiment. Following removal of the discs in each animal, the condyle was recontoured with a bone file to simulate the surgical condition of a human joint following discectomy. Then, on one side an autogenous auricular cartilage graft was wired to the lateral aspect of the fossa. On the contralateral joint, the disc was removed and the condyle recontoured, but no replacement was used. The joints were evaluated histologically. After 24 weeks, the non-grafted side showed more and more irregularity of the surfaces of the condyle and glenoid fossa. However, on the grafted side, the joint continued to demonstrate close adaptation of the cartilage graft to the fossa. In addition, the condylar surface appeared to be relatively smooth with a covering layer of fibrous connective tissue. High power magnification of the cartilage graft showed that viable chondrocytes continued to exist within the grafted disc. So, in this study the authors have shown that a cartilage graft taken from the ear may be placed into the temporomandibular joint of monkeys and may substitute for the meniscus. Hopefully in the near future we will have documented reports of the results of this interesting procedure in a group of human patients.

ARE DENTAL IMPLANTS EFFECTIVE OVER THE LONG-TERM? Dental implants are enjoying widespread use in the United States today. However, as with any new advance in technology, the application is often well ahead of the science and proof. Today there are over 30 different implant systems available. Some have been well tested, but others have not. If you were to have an implant placed in your mouth, which system would you choose? Now that implants have been around in the United States for about eight years, studies evaluating their long-term effectiveness are emerging. A recent study appearing in the *Journal of Prosthetic Dentistry* (63:451-57, 1990), evaluated the implant system developed by Dr. Branemark and his Swedish colleagues. This system is marketed as the Nobelpharma implant system in

the United States. Their sample consisted of 46 consecutively treated adults. All patients were totally edentulous. Five or six implants were placed in each of the maxillary and mandibular dental arches. A total of 274 implants were placed in these individuals. To be successful, the implants had to meet the following criteria. First of all, they had to be immobile. Secondly, they had to be free of any radiographic radiolucencies. The postoperative follow-up period in this study was five to nine years. The results showed that 30 out of the 275 implants failed. Twenty-one of these, or about seven percent simply did not osseo-integrate during initial placement. An additional eight, or about three percent failed after the dental prostheses were fixed to the implants. The overwhelming number, or about 90 percent were successful at supporting a fixed prosthesis over the time of this study. The authors believed that in their study, iatrogenic problems due to overinstrumentation of the bone or inadequate implant length led to implant failure. With the addition of more experience, these technical problems should be overcome in the future. Long-term documentation of other implant systems will be necessary to determine their success rates.

STANNOUS FLUORIDE EFFECTIVE AT REDUCING PLAQUE AND GINGIVITIS IN HUMANS — We are all aware of the importance of fluoride in preventing caries. During dental development, fluoride is incorporated into the enamel to form fluoro-apatite, which makes the enamel more resistant to acid breakdown. However, within the past 15 years, evidence from animal studies has shown that topically applied fluorides have antimicrobial properties thereby reducing plaque formation and gingivitis. Dr. Tinanoff and his research associates at the University of Connecticut investigated the effect of stannous fluoride in humans and reported their findings in the *Journal of Dental Resources* (68:1727-28, 1989). Their sample consisted of 61 adult subjects. After initial cleaning, the individuals were assigned to one of two fluoride gel treatment groups. One group was given a stannous fluoride gel and the other was given a sodium fluoride gel. They brushed their teeth twice each day with their respective gel for six months. Before, during and after the experiment, the patients' gingival health and plaque accumulation were measured. At the end of the experiment, the researchers found that twice daily brushing with stannous fluoride resulted in a 50 percent reduction in gingival bleeding and plaque when compared with the sodium fluoride gel. The results were clinically and statistically significant. Therefore, this study has clearly shown that fluoride not only strengthens enamel, but has a significant effect on reducing gingivitis and plaque formation in humans. However, the type of fluoride is critical in producing this latter effect. Stannous fluoride is much better than sodium fluoride at reducing gingivitis and plaque.

IMMEDIATE IMPLANT PLACEMENT INTO EXTRACTION SITES — Everyone has heard the term osseo-integration. This term of course refers to the process that occurs when titanium implants are placed into the alveolus. Today, titanium implants are revolutionizing restorative dentistry. Traditionally, these implants have been placed into a ridge that had been edentulous for some time. However, in many patients the alveolar ridge begins to deteriorate vertically and labiolingually once the tooth has been extracted. If too much bone is lost, this can compromise the placement of the implant. In order to prevent the bone loss, researchers are now suggesting immediate implant placement following tooth extraction. A recent preliminary report of this technique appeared in the *International Journal of Periodontics and Restorative Dentistry* (9:333-43, 1989). In this article, Dr. Richard Lazzara outlines a technique whereby the titanium implant is threaded into the socket immediately after tooth extraction. The key to successful osseo-integration is to prevent the epithelial tissue from invaginating down into the socket between the bone and the implant during the healing phase. This is accomplished by placing Gore-Tex, a semi-permeable membrane, over the extraction site after placement of the implant. Gore-Tex has been shown to be extremely successful at allowing the passage of fluids across its membrane but preventing epithelial cells from migrating through it. After one month, the Gore-Tex is removed and the bone is allowed to fill in around the implant. Osseo-integration around the implant takes about six months. After that time, the implant may be uncovered and a restoration may be placed. In this article, Dr. Lazzara shows two cases with excellent documentation and post-restorative follow-up. Although further documentation and long-term studies are necessary, we should be aware of this technique when treatment planning a patient that has suffered from a traumatic injury to a single tooth.